INDEX.

ILLUSTRATIONS.

A

Aerhydric chain, Toselli's........ 322
African habitations.............. 247
Air compressor, Guild and Garrison's.............. 311
Air, supporting a ball on a blast of 180
Ambulance, a new 151
Ammonia soda process, the...... 405
Angle, trisecting an............ 86
Aquarium for the Paris exposition 7
Arctic expedition, the recent.... 34
Asparagus in winter............ 87
Axe, Rollins'.................. 355
Axle box, self-oiling, Tomlinson's.... 54

B

Bad Lands, the, Dakota Territory 167
Ballasting tube for vessels, Bergold's............. 406
Basilisk, the......... 215
Boiler cleaner, Cronin's.......... 130
Boiler regulator, gas, Martin's.... 262
Boiler tube leak stopper, McConnell's............. 230
Boiler, tubular safety, Firmenich's 47
Bottle, perfume, Ward's......... 230
Brick machine, rotary, Machen's. 271
Bridge, South st., Philadelphia, Pa. 351
Bridge, the East river-making the wire.............. 127
Bridge, the foot, over the East river.................. 143
Burner, Godefroy's 339

C

Calculating machine, Grant's.... 294
Caliper, a micrometer............ 9
Calf muzzle, Miller's............ 386
Capillarity, Romilly's experiments in............ 306
Capstan, steam mining.......... 4
Carpet stretcher, Bullard's....... 50
Cars, street.................. 131
Cat teaser, Topliff's............ 265
Cattle, prize English dairy........ 39
Chemical magic................ 71
Chimneys, smoky................ 36
Chuck, lathe, Vinton's.......... 118
Chuck, self-centering, Frost's... 406
Church, ancient timber, in Norway 190
Clocks, mysterious, Robert's..... 405
Cockeye, harness, Knapp and Schallhorn's 118
Coffee and sugar machinery, Guardiola's 82
Colors from soap films, projecting 341
Connecting rod, curve of a point on a.................... 180
Connecting rods, solid-ended.... 20
Copying press, telegraph message 178
Corn sheller, Goddard's.......... 184
Cow milker, Knollin's.......... 102
Cradle, bedstead, Robertson's. . 230
Cremation temple, Lilienthal's.. 119
Cut-off, variable, Fish's.......... 169

D

Dates in Ceylon, gathering....... 111
Decorticating bow, Sabate's..... 182
Door knob screws, device for holding, May's............. 275
Dredging machine, Davis'......... 50
Drill, rock, Merahon's.......... 258
Dumper, lightning, Willes and Rowe's.................... 4
Dumping scow, Allen's.......... 166
Duomo and Campanile, Florence, Italy 231
Duplication of the cube.......... 41

E

Electric candle, Jablochkoff's.... 339
Electro-static induction, Volpicelli's experiments........... 401
Elevator, grain, New York Central Railway's.............. 390
Elevator, pneumatic, Bianchet's, 403
Engine, agricultural, Frick & Co.'s......................... 95
Engine, automatic cut-off, Brown's.................... 1
Engine, compound marine, Sells' 66
Engine, domestic steam, Landis' 22
Engine, hydraulic, Richardson's 262
Engine, hydrocarbon, Brayton's. 15
Engine, portable steam, Mills'... 303
Engine, rotary, Thomas'......... 207
Engine, steam, Papin's. 130
Experiment, a lecture............ 405
Exposition of 1878, the French—The Trocadero.............. 31

F

Faience ware.................... 103
Fire alarm and bell pull, electric Gaulnier's................... 4
Fire escape, Houghton's......... 294
Fire-extinguishing apparatus for vessels, Granger's............. 383
Fish scaler, Lawton's............ 306
Fistularia tabaccaria............. 7
Flight, mechanical, Tatin's experiments 179
Fountain at Aranjuez............ 343
Frame clamp, Wieting's.......... 19
Friction clutch, new............ 147
Friction of slide valves, determining, Dean's method....... 340
Frost plant, the................ 116
Fumigator, new....... 358

G

Gardens of the Villa Medici, Rome......................... 55
Gauge, Stoner's................. 406
Gauges 373
Gecko, the fringed tree.......... 215
Glass bottles, cutting............ 36
Glass-making, curiosities of...... 146
Glass, tempered................ 18
Gleichenia dicarpa.............. 359
Gorilla, the.................... 68
Grain sampler, Gent's........... 227
Grinders, knife and stove plate, the Tanite Co's........ 22

H

Hare and her foes, the........... 23
Harpy eagle, the................ 135
Hat and coat rack, Dorr's........ 86
Hay fork, horse, Grant's.......... 341
Heart, the, Marey's investigations 51
Hellgrammite, the............... 392
Hemi-plunger, Tommasi's........ 115
Hippopotamus dentistry 67
Hoisting machines, friction, Mundy's...................... 288
Horse boot, Fennoll's............ 286
How to do it, and how not to do it 309
Hunted down 23
Hygrometer, Hachenberg's....... 35
Hygroscopes, natural 67

I

Ice cream freezer, Dexter's...... 6
Ice fringes on plants............ 212
Ice, traveling over the.......... 34
Injector for steam boilers, Westley's 355
Ironclad Duilio, Italian.......... 57
Ironclad Hamidieh, the Turkish. 370
Ironclad man-of-war Alexandra, the 258

K

Kingfisher, a remarkable......... 311

L

Lake dwellings, African.......... 247
Lathe, gap, Watson's............ 255
Laughing jackass of Australia, the 311
Leather-stamping machine, Urner's 365
Life preserver, Beck's........... 274
Life-saving devices, Houghton's 335
Lions, young, Central Park, New York....................... 295
Lithographic stone dresser, Perron & Co.'s................. 303
Locomotive, traction of a........ 132
Locusts of the West, the......... 260
Lubricant tester, Deprez and Napoli's 214
Lubricant - testing apparatus, Thurston's 89

M

Mammoth artificial, Martin's.... 407
Marmoset, an interesting 407
Measure, liquid, Wilkinson's..... 374
Meat, export of American, to England.......................273, 279
Microscope object finder, Barpeen's 100
Mill, grain, Straub & Co.'s........ 86
Milling machine, Campbell's...... 322
Money box, advertising, Brice's, 134
Motor deception, a new. 179
Moulding machine, upright, Blaisdell's................... 86
Mushrooms..................... 194

N

Navvy, steam, Dunbar & Ruston's........................ 260
Nerve excitements, propagation of........................ 227

O

Oreocephale, the marine......... 215
Organs, old and new............. 242
Ornithological deformities....... 98

P

Paddle wheel, Williams'.......... 374
Palazzo Vecchio, the, Florence, Italy 231
Palæocrystic sea, the............ 35
Panther and her young........... 295
Paper barrel mould, Hubbard's... 339
Paper box machinery............. 5
Paper pulp distributor, Jennings' 309
Paper pulp engine, Warren's..... 403
Papyrus or paper reed, the....... 307
Pavilion, a Persian............... 323
Persia, temporary residence of the Shah................. 323
Persian house, courtyard of a.... 183
Peruvian antiquities in Paris..... 375
Photographer's desk, Burrows and Colton's.... 236
Phylloxera remedy — Decortication 182
Pinks, the..................... 87
Pipe tongs, wrench, and screw-driver, Slates & Cook's....... 310
Pipe tools 371
Planing and polishing machine, Norris' 386
Pneumatic transmission in New York city................... 175
Pompeii, its ruins, relics, etc. 326, 327, 328
Power economizer, Peters'........ 99
Prickly comfrey, the............. 71
Puddling machine, Clough & Co.'s 15
Pump bucket, adjustable chain, Kenyon's 310
Pump, Little Giant, Robaugh's.. 162
Pump, rotary, Houyoux'.......... 182
Pump, the Selden............... 198
Pumping engine, Louisville. 25
Punching machine, hydraulic, Hydraulic Engineering Co.'s..... 102

R

Rafflesia, the 87
Rail joint and nut lock, Nicholl's 358
Railroad grader, Harden's 223
Railroad, the Wetli Mountain.... 114
Railway, locomotive, hydraulic, Leaman and Heckart's........ 79
Rat, the nerves of a 227
Rat trap, Wilhides' 150
Ricein China, cultivating 194
Rivets and riveting machinery... 58
Roots, the respiration of.......... 70
Rubber articles, making, Longden's method................. 180

S

Safes are blown open, how 244
Safety valve tests................ 358
Safety valves, Melling's.......... 99
Sailing against the wind......... 363
St. Peter's and the Vatican, Rome 55
Saw, scroll, grinder and polisher, Trump Bros................ 275
Sawmill, portable gang, Marston's 6
Screw-cutting lathe, English...... 118
Screw-cutting tools, Wiley & Russell Co.'s......... 54
Screw threads, remarkable....... 296
Sea lions, Californian............ 343
Sewage irrigation................ 352
Sewage irrigation and purification, near Paris 367
Shafting, to adjust line........... 34
Sieve, water boiled in a....... 306
Silverware, the manufacture of.. 287, 290
Slide valves, friction of........... 364
Smelting furnace, a Kouy......... 151
Snake-eating frog, the............. 259
Snow plow, Little's 236
Soda-carbonating apparatus, McCloskey's.... 236
Solar photographic instrument, Secchi's.................... 98
Spark arrester, locomotive, Smith's.................... 70
Spectroscope for direct vision, Ricco's..................... 184
Spike machinery............... 163
Spoke-making machinery......... 68
Spring, vehicle, Fogg's.......... 214
Springs, winding spiral 324
Spring-shaping machine, Lewis'. 374
Star, the new 104
Steam carriage, Lauck's 57
Steam wheel, Thomas' 207
Steaming food, Andrews' apparatus 67
Stone-working implements 213
Storm glasses and their indications 38
Sugar and coffee machinery, Guardiola's 82
Sun spots...................... 98
Symphytum asperrimum.......... 71

T

Targets for the 100 ton gun 150
Telephone, A. Graham Bell's..... 191
Telephone, Gray's............... 263
Testing machine, Thurston's..... 342
Toaster, bread, Harris' 99
Torpedo, effect produced by a.... 246
Torpedo experiments at Cherbourg, France.............. 239
Torpedo launch, Thorneycroft's, 246
Torpedo warfare, Porter's system 159
Torpedoes, making the Harvey, at Woolwich, England 402
Toy flying machine 38
Trap, sewer, Adee's.............. 230
Trolling hook, Brush's........... 114
Tube expander, Work's........... 66
Tunnel, etc., Delaware and Lackawanna Railway, Hoboken, N. J......................... 319

V

Valve, relief and safety stop, Wiggins' 351
Vase, the Bryant 291
Velocipede, new water, Jobert's. 38
Violins, wood for............... 100
Vise, pipe, Exeter Machine Works'................... 19

W

Watch, Mattie's 342
Water elevator, Wright's........ 274
Who comes here?............... 63
Wire, making, for the East river bridge 127
Woodworking machines, Arbey's..................... 210
Writing, method of secret, Bergold's.................. 406

Y

Yardstick and measure, Some's . 262

* * *

MISCELLANY.

Figures preceded by a *star* (*) refer to illustrated articles.

A

Academy of Sciences, New York, 25, 67, 117, 152, 217, 281, 329, 345, 360
Accident, bridge, at Ashtabula, Ohio 35
Acids, organic, and minerals..... 329
Adirondacks, lithology of the.... 25
Advertising, ingenious............ 23
Aerhydric chain *322
Aerial propulsion, new discoveries 276
Aeronautics......................21, 276
Air, compressed, for power....95, 356
Air compressor *310
Air for combustion of coal ....(5) 59
Air contaminated by artificial illumination 213
Air, pressure of, and temperature (41) 172
Air suspended in water 246
Alcohol and cold 33
Alloy expanding in cooling...(17) 138
Alloy for fine castings.........(6) 44
Alloys in U. S. coinage ....(39) 187
Alum in bread ....(5) 362
Alum in bread, estimating........ 306
Alum solutions, density of........ 120
Amber, Roumanian 165
Ambition, lost his 305
Ambulance, a new.................*151
American Association for the Advancement of Science.......... 398
American industry 281
Ammonia salts from gas liquor... 199
Anæsthetic, a new................ 152
Andes and the Amazon, the 67
Aniline black ....(28) 296
Aniline water colors 95
Animals, geographical distribution of 82
Animals, the migrations and dispersal of 65
Animation in vegetables, suspended....................... 50
Annotto, extract of ....(27) 315
Answers to correspondents....11, 27, 44, 59, 75, 90, 107, 123, 138, 155, 171, 186, 203, 219, 235, 250, 267, 283, 299, 315, 331, 347, 362, 379, 410
Ant intelligence 198
Antifriction metal, Belgian 225
Antique inscription, valuable..... 66
Apparatus, simple 28
Apples, export of............... 261
Aquarium, a colossal.............* 7
Architecture, city................. 145
Arctic expedition, the recent....* 35
Arctic navigation, a lesson in.... 177
Armada, relics of the Spanish.... 38
Arsenic from cobalt and nickel... 322
Asbestos, a new use for 217
Ashtabula verdict, the 192
Asparagus in winter ....* 87
Asphalt tiles 7
Astronomical notes....9, 73, 183, 280, 341
Astronomical notes for March, some.......................... 183
Astrophyllite 345
Augers, twisting...............(25) 171
Axe, a new.......................*355
Axle box, self-oiling ....* 54
Axles, greasing 391

B

Babbitt metal boxes............(1) 305
Baby brutes 294
Bad Lands of White River, the...*167
Ball on a blast of air, a *180
Ballasting tube for vessels.......*406
Balloons, varnishing ....(34) 368
Banian tree, the.................. 401
Barometer and the sea level..(16) 59
Barometers, flower............. 399
Barrels, stopping pores in 271
Bathometer, a new................*182
Battery, a celebrated.............. 182
Battery, a simple ....(3) 11
Battery for alarm bells.........(33) 250
Battery, galvanic, in medicine... 216
Beavers in California 228
Bee-keeping in the Himalayas ... 275
Beer for starch sugar, testing 402
Bees, a woman's success with.... 244
Bees, management of 247
Beef in England, American 72
Bell metal 40
Belle Isle, blocking the Straits of 265
Bicarbonate of iron 148
Bichromate of potash, an antiseptic......................... 296
Binocular vision experiments 281
Birds, flight of................... 356
Birds' nests 389
Bismuth, purifying............... 386
Bituminous macadamization 230
Blacking, waterproof ....(9) 107
Bleaching liquor...............(38) 363
Bleaching wool 408
Blisters, osmose plan for.......... 17
Blood, analysis of ....(50) 187
Blowpipe apparatus 391
Blowpipe reagents, new class of . 295
Blue glass and heat.............(5) 219
Blue glass and hydrophobia....... 166
Blue glass blindness 384
Blue glass deception, the, 113, 129, 145
Blue glass epidemic, the 208
Blue glass in a nutshell 184
Blue glass photography 218
Blue glass science 121
Blue glass skeptics, more 150
Boiler cleaner, new...............*130
Boiler explosions 20, 68, 84, 95, 135, 148, 212
Boiler, foaming in a ....(15) 379
Boiler scale preventive, a 71
Boiler scale, slippery elm for..... 79
Boiler tubes, stopping leaks in ..*230
Boiler, wrought iron safety.......* 47
Boilers and steam pipes, covering 365
Boilers, safe working pressure (34) 90
Bolts, dimensions of 68
Bonanza, an Arizona 38
Bones, dissolving with acid...(16) 90
Bone meal for grapes 321
Book edges, coloring..........(31) 283
Books? how do you keep your ... 70
Boracic acid, test for............ 134
Borax as an antiseptic 244
Boring, deep, in Switzerland..... 323
Botch, a $50 000 341
Bots 9
Brazing thin pieces of brass ..(26) 219
Brazing tin.....................(24) 379
Bread, flour, etc., adulteration of 391
Brick machine....................*271
Brickwork, black..............(30) 236
Bridge, cost of the East river.... 64
Bridge, the East river............*143
Bridge, East river, wire for the ..*127
Bridge, the New York and Brooklyn 235
Bridge, second, New York and Brooklyn 49
Bridge, the Niagara 249
Bridge, the Niagara railway 297
Bridge, the Niagara, engineer's examination 225
Bridge, the South street, Philadelphia *351
Bridges, dangerous 100
Bridges, railroad 68
Bronze, cleaning. ....(13) 203
Bronzing composition............ 87
Brushes, varnish, softening...(47) 187
Bryant vase, the *291
Buffalo, domesticating the 10
Bull on the track, a.............. 256
Burner, new Godefroy *339
Business, man of, etc.............. 56
Business stagnation in Germany . 257
Butter, adulteration in 309
Butter and milk 391
Butter, artificial 9
Butter, rejuvenating 102

C

Caffeone 114
Calcium salts for street watering 273
Calculating machine..............*294
Calf muzzle *386
Caliper, a micrometer...........* 9
Calipers, the form and use of..... 3
Camellias, training............. 86
Canal, cleaning a ....(14) 379
Capital and labor 135
Capstan, a new steam ....* 4
Cars, hydraulic propulsion of..... 39
Cars, street *131
Carbolic acid for whooping cough 36
Carbons, battery..............(42) 316
Carbonic acid exhaled by animals 102
Carbonic acid from animals 200
Carbonic oxide, test for 386
Carpet stretcher, improved.......* 50
Carriage woodwork, heat and.... 56
Case-hardening German steel (37) 331
Cast steel, facing cast iron with (29) 138
Castings, to soften metal......... 214
Castings, weight of ....(54) 28
Cat teaser, the...................*265
Cattle, dairy....................* 39
Cattle food 69
Cavalry equipment 68
Cellar walls, leaky............(30) 379
Cement, aquarium.............(48) 251
Cement, cutler's................ 214
Cement, fireproof ....(20) 200
Cement for cracks in cast iron (36) 220
Cement for cracks in horses' feet (4) 219
Cement for fine sand, etc .....(21) 171
Cement for metal and glass....... 25
Cement for nitrate of silver baths (49) 187
Cement for paper and iron....(36) 171
Cement for rubber and earthenware ....(19) 138
Cement for rubber bags........(21) 267
Cement for sealing bottles.....(15) 317
Cement for vulcanite.(6) 171, (15) 203
Cement, hard white...........(11) 386
Cement, London.................. 213
Cement, Portland................ 227
Cement, waterproof.............. 199
Cementing rubber to steel ....(32) 28
Centennial awards lawsuit 97
Centennial, a sinister result of the... 21
Centennial lightning rods, the.... 196
Centennial medals................ 166
Centennial, minerals at the....... 300
Centennial surplus, the........... 266
Chemical magic..................* 71
Chemical progress in 1876 ....37, 72
Chicken houses, purify your...... 226
Chilblains ....(13) 75, (19) 203
Chimneys, smoky................* 36
Chinaman and ticket agent 274
Chloroform and dentistry........ 105
Chloroxynaphthalic acid.......(36) 308
Chromate of lime, acid (60) 28, (18) 123
Chuck, lathe.....................*118
Chuck, self-centering variety....*406
Church, a Norwegian timber.....*190
Circle, dividing a, by parallel lines ....(11) *62
Cistern, building a.. ....(16) 265
Cleaning woodwork 311
Cleopatra's needle 215
Clinkers in stoves..............(11) 219
Clock, a wind wheel.............. 81
Clock collector, a 119
Clocks, more mysterious 214
Clocks, more remarkable 17
Clocks, the mysterious, secrets of *405
Clothes pins 227
Coal, examination of gas..... 261
Coal miners' relief fund 84
Coal, putting in.................. 97
Cobalt from nickel, separation of, 216
Cockeye, harness.................*118
Cockroach utilized, the.......... 391
Codfish for market, preparing.... 168
Coffee and sugar machinery ......* 82
Coining gold and silver 281
Cold iron and the mucous membrane 39
Colds, the avoidance of........... 72
Cologne water as an anæsthetic .. 149
Color and disease................ 244
Color blindness on railways...... 148
Color ghosts..................... 52
Color music 16
Colors, interference, from soap films *341
Columbia College professorships, 321
Comet, discovery of a new....... 148
Compass, the, and heat.......(34) 363
Compressed air vs. steam 95, 356
Concrete under water, laying..... 246
Connecting rod brasses, adjusting *235
Connecting rod, curve of a point on a ....*(10) 44, *180
Connecting rods, solid-ended ...* 20
Conservatory on a roof, a 321
Conservatory, plants dying in a, (70) 139
Copper, cleaning..............(26) 331
Copper, drilling..............(34) 331
Copper-plating type metal....(37) 240
Copper, smelting native.......... 35
Copying press, message..........*178
Coral, artificial.................. 308
Coral bed, a new pink............ 3
Corn culture, Indian.............. 41
Corn sheller, the Little Speedy...*184
Correspondence, Washington, 164, 196, 228, 260, 292, 308, 340, 356, 388
Cotton and its spindles 244
Cotton mill, a Japanese.......... 169
Cotton picking by machinery..... 64
Cotton plant, wonderful species of the 166
Cotton, pressing, in vessels 39
Cotton seed oil, clarifying.....(40) 91
Cotton seed oil, its uses, etc 229
Court house, fall of a............ 343
Cow milker.......................*102
Cracker-packing machine, wanted 273
Cradle attachment for bedsteads,*230
Crayons, colored ....(26) 283
Cremation temple, design for a..*119
Criminal propagation, prevention of 82
Crocus ... .(57) 28, (74) 91
Crops, two great.................. 376
Crucibles ....(9) 219
Cutlery factory, a Sheffield....... 197

D

Dairy, a gigantic model 200
Dairy interests, the United States 199
Dam, bursting of a reservoir...... 235
Damp-proof walls 79
Darmouth College, new president of 100
Dates and the date palm..........*111
Dead, dangers from the 295
Deer horns, cleaning..........(69) 139
Dentistry, artistic 275
Diamond cutting by girls......199, 242
Diamond, the analysis of the..... 73
Discontent 214
Disease propagation, infectious.. 121
Disinfectant for drains, etc....(9) 395
Disinfecting a close room....(39) 90
Dissection and decapitation society, a 33
Distance indicator................ 22
Dog, the spitz..................(1) 347
Dog show in New York........... 214
Door knob screws, holding.......*275
Drawing scale, new.............. 328
Dredging machine, a new.........* 50
Dredging machine, cheap ....(14) 379
Drills, sizes of ....(30) 203, (25) 267
Drug law in New York. ....(3) 347
Drunk or diseased................ 384
Dryers, turpentine, etc. .....(38) 300
Drying house, lumber..........(6) 125
Dumper, lightning ....* 4
Dumping scow, a new............*166
Duplication of the cube.... .....* 41
Dyeing blue gray on gauze.... 19
Dyeing cloth black 402
Dyeing cochineal red on flannel.. 9
Dyeing, cold water.............(9) 123
Dyeing deep rose 26
Dyeing horn and ivory ....(26) 203
Dyeing light rose 5
Dyeing loose cotton.............. 408
Dyeing, preparing garments for.. 323
Dyeing rattan..................(3) 171
Dyeing raw cotton............... 182
Dyeing straw.................... 380
Dyeing white muslin crimson.(12) 235
Dyeing with aloes 359
Dyeing wood blue ....(15) 299
Dyestuffs, blue, etc ....(10) 331
Dyspepsia and long life.......... 271

E

Eads, Captain, his success........ 133
Earth's state, late theories on the 68
Earth, the shape of the.... .. 148, 212
Editor, wants to be an 65
Education, self 289
Edward, Thomas, naturalist...... 85
Eggs, desiccated................ 408
Eggs, dried..................... 275
Eggshells, to harden ....(32) 315
Electric bells ....(33) 388
Electric candle, the.............*339
Electric fire alarm and bell pull ..* 4
Electric illumination, progress of 388
Electric light, etc.............(38) 91
Electric phenomena, strange..... 357
Electrical balance, an 196
Electric condenser ....(34) 27
Electrical experiment, curious... 329
Electrical treatment in wounds... 374
Electricity, cutting down trees by 370
Electricity, driving horses by 391
Electricity, galvanic and chem... 391
Electricity in dyeing, application of 406
Electricity, velocity of.......... 266
Electro-chemical illumination .. 300
Electro-magnetic plant.... 388
Electroplating ....(15) 59
Electroplating, conducting surface for ....(28) 200
Electroplating insects, etc.....(64) 139
Electro-static induction, Volpicelli's experiments...........*401
Electrotypy ....(27) 219
Element? is it a new............ 328
Elephants, age and gestation.(20) 283
Elevation in mines, pneumatic..*403
Elevator, grain, New York Central Railway's.............*390
Emery wheels................(31) 235
Employers and working men 360
Enamels for culinary vessels 21
Enameled ware, poisonous....... 340
Engine, a new hydraulic.........*262
Engine, automatic cut-off........* 1
Engine, Brown & Co.'s 120
Engine, compound ....* 66
Engine of the future, steam...... 167
Engine, Papin's steam...........*130
Engine, portable steam *303
Engine, rotary steam *207
Engine, the domestic steam......* 22
Engine, the Eclipse agricultural..* 95
Engines, agricultural steam 255
Engines, water evaporated through........ ....276, 324
Engine cut-off, steam...........*169
Engineer, duties of an 298
Engineers, bewitched 34
Engineers, report of the chief of, U. S. A 166
Engineer, the oldest locomotive, 292, 321
English view of American manufactures 288
Entrails, ropes made of 213
Eruptions, great................ 262
Eucalyptus globulus 211
Evaporation and rainfall, results of 257
Evergreens, the uses of 282
Evergreens, transplanting... 217
Evolution of the brain 210
Excavator, a steam *260
Excitement, the stimulus of business...................... 145
Exhibition, the French 324
Exhibitors at Paris, American ... 321
Experiment, new lecture.........*405
Exploration in Alaska......... ... 374
Explosion of an electrical machine........................ 325
Explosion of kerosene lamps..... 176
Explosion in an experiment 235
Explosion in a foundry ....(8) 156
Explosion of oxygen and hydrogen.....................(1) 171
Explosions, remarkable.......... 292
Explosive compound for guns, new 304
Explosive compounds............ 241
Exports of produce.............. 300
Exposition, buildings for the French ....* 31
Exposition, opening of the permanent 82
Exposition, the French, freight charges 103
Exposition, the French, space at, 151
Exposition, the French, workmen at...................... 409
Exposition, the Paris, the American exhibit.............. 324
Eye, photographs in the.......... 198

F

Facts in nature 228
Faience ware *103
Fairbairn, statue of Sir W 261
Feathers, renovating..........(2) 59
Feet, perspiration of the......(43) 252
Fermentation in wine, checking (10) 59
Fern, a beautiful *359
Ferrous oxide in silicates 67
Fertilization in plants, cross and self........................ 240
Fertilization of pear trees, curious 7
Files, cracking of ....(6) 395
Filtration under pressure 153
Fire arms for the Turks........... 152
Fire at the St. Louis bridge 182
Fire escape, a simple............ 289
Fire escape, improved *294
Fire escape invention wanted, a..*306
Fire extinguisher, new 228
Fire extinguisher, ship's.........*383
Fire, extinguishing 52
Fire hose and couplings, tests of. 50
Fire in ships, detecting and extinguishing 89
Fires, colored..........(16) 171, (18) 267
Fires, hotel 372
Fireproof construction, new method 104
Fireproof curtain, metallic 377
Fireproof walls................. 307
Fireproofing hair rope.........(1) 410
Fireproofing with tungstate of soda.......................(3) 155
Fireworks, poisonous 84, 197
Fish, fresh water and salt water.. 305
Fish scaler, improved *306
Fishing extraordinary........... 313
Fishlike odor of potable water... 217
Five cent pieces, counterfeit 135
Flames, luminous, recent studies of 97
Flames, sensitive..............(5) 331
Flesh worms...................(43) 139
Flight, mechanical, experiments on..........................*179
Florence, Italy *231
Flour, effect of sunlight on 249
Flour, testing 338
Flower garden, a small 279
Flower, the largest, in the world,* 97
Flower trade of New York....... 97
Flowers, artificial, as barometers, 389
Fly paper...................345, (22) 395
Fly wheel, proportions of a...(32) 300
Flying machine, a toy...........* 38
Food steamer, a new...........* 67
Force analyzed 80
Force, centrifugal.............(8) 299
Foresite 358
Forgers, good.................. 228
Fountain on a spire, a 398
Fountains at Aranjuez............*343
Fox, a cunning old 7
Frame clamp....................* 19
France, the Mediterranean coast of 98
Franking privilege again, the 184
Friction clutch for shafting *147
Friction of slide valves........... 163, 226, *264, 340
Frog, a snake-eating *259
Frogs on horses' feet, do not pare......................... 182
Frost crystals on windows.....(1) 250
Frost plant of Russia, the....*116, 228
Fruit in Europe, American 368
Fruit trees 152
Fruit trees, wash for 209
Fruit trees, winter dressing...... 56
Fumigator, a new...............*358
Furnace, a Kouy smelting........*151

Furniture polish....(50) 26
Furs, ornamenting.... 37
Future of the race, science prophecies the.... 129

G

Galvanized cooking vessels, etc.. 244
Galvanized iron, crystal surface on....(20) 219, (38) 380
Gardens of the Villa Medici, Rome....* 55
Gardening all the year round.... 307
Gas, heating with natural.... 196
Gas iron.... 166
Gas, making illuminating....(21) 75
Gas regulator for boilers....*262
Gastric juice, investigations on the.... 370
Gauge, improved....*406
Gauge, the Edson recording.... 325
Gauges....*373
Geometrical teachings, defective, 2
Glass bottles, cutting....* 36
Glass, cutting holes in....(5) 186
Glass, iridiated....211, (16) 283
Glass signs, making.... 79
Glassmaking, curiosities of....*146
Glass, tempered....* 18
Glass, toughened, in Brooklyn.... 121
Glass tubes, to cut....(3) 203
Glassware, remarkable.... 150
Glycerin in boilers, etc....(27) 45
Glycerin, new use for.... 163
Glycerin, the uses of.... 69
Glycyrrhizin.... 408
Gold and iron, separating....(17) 27
Gold and silver in Russia.... 404
Gold and silver on glass....(29) 219
Gold mining in China.... 52
Gold paint, chloride of....(33) 45
Gold rags, reducing....(27) 155
Gold, six tons of.... 66
Gold, transparent.... 385
Gold wash....(18) 250
Goethe, obligations of science to, 16
Gorilla, the....* 63
Governor, the Allen.... 293
Grain sampler, improved....*227
Granite and marbleized ware.... 325
Granulated eyelids....(31) 235
Grape vines, antidote for oidium, 201
Gravestones, about.... 384
Great Eastern a meat ship.... 307
Greek, an ancient, found by Dr. Schliemann.... 66
Greenbacks? what becomes of old.... 54
Greenhouses, painted pipes in, (3) 123
Grinders, planer knife and stove plate....* 22
Grinding, fast and slow.... 372
Guano as manure....(41) 187
Guano deposits.... 375
Gum, kauri.... 403
Gun, a magazine, in 1775.... 52
Gun, ball fired vertically from (31) 90
Gun, casting a large.... 404
Gun cotton....(29) 379
Gun cotton, new use for.... 9
Gun, the Hitchcock.... 241
Gun, the Krupp....(2) 299
Guns for the Turks.... 339
Guns, new mode of shipping.... 169
Gunpowder....(60) 91, (28) 379
Gunpowder, mining....(26) 299
Gynomania and other manias.... 41

H

Habitations, Central African....*247
Hair, kerosene for the....(42) 332
Hair, the human.... 50
Halls and theaters, modern.... 33
Hams, colored cloth for....(12) 138
Harden and polish rubber dental plates, to....(45) 38
Hardware industry, American competition.... 277
Hardware trade, the.... 71
Hare and her foes, the....* 23
Harness blacking.... 81
Harness dressing.... 255
Harpy eagle, the....*135
Hat and coat rack....* 86
Hay fork, horse....*341
Health improvements.... 109
Health of cities, comparative.... 229
Health of employments.... 149
Heart, the action of the....* 51
Heat.... 387
Heat conductivity of metals..(57) 187
Heat, non-conductors of....(39) 396
Heat of the planets, absolute zero, etc....(56) 251
Heat, propagation of.... 370
Heat, specific, of water, etc..(46) 91
Heating by main pipes.... 9
Heating, steam, water in....*(23) 362
Heating street cars not feasible.. 84
Heating, wholesale.... 81
Hellgrammite, the....*393
Hemileia vastatrix, the.... 341
Hemi-plunger, the....*115
Hemlock knot, to bore a.... 370
Hens, Leghorn.... 114
Hints, a few modest.... 71
Hippopotamus dentistry....* 67
Hoisting engines, friction....*328
Honey in trees.... 408
Hop extract....(9) 75
Horn, clarifying....(40) 396
Horse boot....*386
Horses, feeding....(34) 108
Horses' feet, care of.... 312
Horses, tractile power of....(50) 251
Hothouse, building a....(28) 395
How to do it, and how not to do it....*309
How we are able to do it.... 139
Human machine and its fuel.... 336
Hunted down....* 25
Hunting ground, a new.... 49
Hurry and high pressure.... 266
Hydrocarbon motor....* 15
Hydrofluoric acid....67, (45) 91
Hydrogen, making....(38) 139
Hydrophobia, treatment of.... 274
Hygrometer, a new....* 35
Hygroscopes, natural.... 67
Hyposulphite of soda, removal of.. 41

I

Ice, a town built on.... 34
Ice cream freezer....* 6
Ice, exports of.... 263
Ice fringes on plants....*212
Ice gorges, great.... 84
Ice yachting on the Hudson.... 132
Iceland spar, new facts about.... 291
Ideation in utero....45, 68, 100
Illumination by reflection.... 104
Illumination, electro-chemical... 200
Illumination, new source of.... 56
Index, on keeping an.... 209
Indium in American blendes.... 25
Indigo, sulphate....(15) 138
Induction coils, wire for....(22) 186
Inebriety as a disease.... 48
Injector....*355
Ink, a new copying.... 396
Ink cakes for stencil use....(7) 11
Ink, deep black....(8) 267
Ink for rubber stamps....(3) 59
Ink, improved Indian.... 26
Ink, postal card.... 201
Ink, printers'....(30) 90
Ink, purple, for marking linen... 117
Ink ribbon for stamps, etc....(52) 251
Ink, silver....(12) 362
Ink stains, aniline....(30) 155
Ink stains, to remove....(26) 315
Inks, aniline, for stencil plates, (9) 331
Inks for stamp use....(26) 324
Inks, gold and silver....(6) 331
Insanity, the encouragement of.. 80
Insects and plants.... 248
Insects, what it costs to feed.... 160
Inventions.... 98
Inventions patented in England by Americans, 10, 26, 84, 106, 152, 184, 234, 266, 282, 298, 329, 345, 360, 378, 393
Inventions, value of small.... 377
Inventive progress, American, 209, 292
Inventor, curious history of an old.... 395
Inventor, the American.... 307
Inventors, a valuable opportunity for.... 6
Inventors, helping.... 385
Iodide of potassium and chlorate of potassa.... 132
Iodine, determination of.... 281
Iron front buildings.... 192
Iron industry in Greece.... 405
Iron pyrites—fool's gold.... 7
Iron salts for steeling copper plates.... 408
Iron, specific gravity of....(9) 283
Iron spire, an.... 6
Iron, the oldest piece of.... 148
Iron trade in England.... 117
Iron, treating for prevention of corrosion.... 232
Iron wash for woodwork.... 246
Ironclad Alexandra, the....*258, 261
Ironclad Duilio, the Italian....* 57
Ironclad, new French.... 38
Ironclad, new Turkish....*370
Ironworkers in Germany, hard times for.... 150
Isinglass, solutions of....(40) 332
Island, a sinking.... 71
Isobenzonitrile, new form of.... 217
Ivory, artificial.... 147

J

Jackass, the laughing....*311
Japanning trays, etc....(28) 219
Jet, imitation....(59) 28
Jewelry, East Indian.... 169
Jugglery, marvelous.... 274

K

Kaolin.... 56
Kerosene, deodorizing....(11) 203
Kid, French....(58) 251
Kingfisher, a remarkable....*311
Knowledge is power.... 349

L

Labor and capital.... 135
Labor-saving appliances, age of.. 294
Laboratory manipulations.... 117
Laboratory notes from Cincinnati 67
Lace and other fabrics, finishing. 86
Lactometer war, renewal of the.. 21
Lake dwellings, African.... 247
Lake Tahoe and its vicinity.... 345
Lambskins, cleaning....(43) 348
Lamp, a hydrostatic safety.... 210
Lamp chimneys, blue.... 47
Lamp explosions.... 212
Lamp invention wanted.... 280
Lands below the ocean level.... 288
Lantern, hang up the.... 4
Last man, the fate of the.... 321
Lathe, gap....*255
Launches, Thorneycroft's fast.... 288
Launching, a disastrous.... 339
Lavoesium, a new metal.... 322
Lead, desilverizing, by zinc.... 233
Lead, molten, to prevent explosion.... 241
Lead, oxidation on molten....(22) 235
Lead pipes nearly harmless....(1) 315
Lead poison in sewing silk.... 57
Lead, sea water and.... 307
Lead water pipes....(16) 208
Learning, the preservation of.... 208
Leather belts, weight of.... 54
Leather, human.... 7
Leather in Germany, American.. 373
Leather-stamping machine....*355
Lemuria, the lost Paradise.... 144
Lice, plant....(30) 219
Life, dual.... 256
Life Insurance Company, the Washington.... 133
Life preserver, novel....*274
Life-saving inventions....*335
Life, the duration of.... 38
Life, the lesson of a.... 199
Light and color, properties of.... 224
Light and the distances of the stars.... 177
Light, calcium....(3) 283
Light for taking photographs.... 83
Light, mathematics of.... 298
Light, the theories of.... 193
Light, the undulatory theory of..*372
Lightning, killed by.... 357
Lightning, protection of buildings from.... 128
Lightning rod points, explosions on....*160
Lightning rods....212, 385
Lightning rods, pointed.... 145
Lightning rods, the Centennial.. 196
Lime in agriculture.... 245
Lime light, heated air for the.... 386
Lime, oyster shell....(4) 171
Liquor, what it is doing.... 360
Lithographic stones, dressing....*303
Live long, how to.... 305
Lizard family, some members of the....*215
Locomotive, traction of a....*182
Locust eggs, experiments with... 276
Locust prospects.... 389
Locust, the Rocky mountain.... 260
Locusts, destruction of the young 344
Locusts' eggs, the.... 261
Locusts, the seventeen year.... 322
London, dwelling houses in.... 85
London, water supply of.... 409
Lost arts in New York, the.... 113
Lubricant-testing apparatus....* 89
Lubricant-testing machine....*214
Lumbago, cure for.... 50
Lunacy, scientific.... 194
Lye from ashes....(40) 268

M

Machine salesman, a....*184
Machine work, special, and manipulative skill.... 96
Machinery, opposition to.... 244
Magnets, making....(25) 395
Magneto-photography, alleged... 257
Make something: produce something.... 220
Malaria and vegetation.... 345
Mammoth, an artificial....*407
Man, marvels of.... 310
Manganese.... 63
Manganese, obtaining....(13) 362
Manias, prevalent.... 332
Manometer, Bourdon's....(1) 59
Map, a remarkable.... 404
Marbled paper....(60) 28
Marbleized and granite ware.... 325
Marmoset, an interesting....*407
Matter as a mode of motion.... 96
Measure, liquid....*374
Meat, American, in England, *278, 279
Medal, the Bigsby.... 230
Medical art, modern tendency of the.... 48
Medical progress of the past year 80
Meerschaum pipes, coloring..(40) 187
Memory, culture of the.... 312
Mental pathology, definitions in. 42
Mercury and gold amalgam..(14) 298
Meridian, to obtain the true...4, (41) 28, 81
Metal, oxidation of molten....(16) 138
Metals, expansible....(23) 108
Metals, preserving.... 288
Metals, strength of.... 404
Metallotheraphy, another deception.... 184
Microscope, power of a....(79) 139
Microscope use, mineral sections 137
Microscopes, exhibition of.... 209
Microscopic object finder....*100
Microscopical Society, Louisville 355
Microscopy in the United States. 273
Midian, discoveries in the land of 406
Milk and butter.... 391
Milk, ewes', the richest.... 194
Milk, preservation of.... 246
Milk sugar, making.... 56
Milk, testing....(17) 107
Milk testing in Holland.... 74
Milk, the scientific grain....* 86
Milling machine, steam chest seat*322
Mind and health.... 329
Mind reading and conjurors.... 64
Mineral, a new.... 67
Mining blast, a tremendous.... 291
Mississippi, Captain Eads' work.. 295
Moles.... 308
Moles, are they useful?.... 277
Money box, advertising....*134
Money, learn the value of.... 280
Moneyed men.... 122
Morphine, hydroiodate of.... 230
Mortar, black....(17) 235
Mortification and water.... 225
Moses refuted.... 21
Motor deception, new Keely....*179
Moulds, glue in plaster....(38) 396
Moulding machine, upright....* 86
Mount Carmel, Ill., tornado at.. 398
Mouth, fluids of the.... 84
Mucilage for envelopes....(17) 362
Mucilage for postage stamps.(16) 347
Mucilage, transparent.... 87
Museum for working men.... 359
Mushroom culture, Japanese.... 163
Mushrooms....*194
Mustard, French....(41) 284
Mycenæ, discoveries at.... 2

N

Name? what's in a.... 26
National trial and its results.... 192
Nautigon, the, new scientific instrument.... 85
Navies, the Russian and Turkish. 308
Navvy, a steam....*399
Nebulæ, the, what are they?.... 370
Neptune, the most distant planet.... 17
Nerve excitements, the propagation of....*227
Neuralgic storm belts.... 304
New books and publications, 10, 58, 74, 106, 122, 136, 201, 217, 234, 266, 329, 345, 360, 377, 409
New South Wales, the resources of.... 160
Nickel plating.... 408
Nitrate of iron....(71) 28
Nitrate of silver, dissolving..(30) 139
Nitrate of silver emulsion, indelible....(33) 115
Nitroglycerin in dynamite, evaporation of.... 248
Nitrous oxide....(23) 283
Nitrous oxide, use of....(6) 203
North America, evolution of.... 360
North pole, reaching the.... 149
Number one, 1877.... 79

O

Obituary:
  Bain, Alexander.... 121
  Blitz, Antonio.... 95
  Harper, Fletcher.... 378
  Salt, Sir Titus.... 41
  Vanderbilt, Cornelius.... 37
  Winans, Ross.... 265
Observatory on Etna, an.... 227
Oedema glottidis.... 73
Ohm, the....(84) 396
Oidium, antidote for.... 201
Oil, bitter almond, and nitrobenzol.... 19
Oil, filtering....(12) 379
Oil for hardening, restoring..(15) 331
Oil, watch....(108) 188
Oils, treating lubricating.... 79
Oil-proof leather....(5) 138
Oil-proofing paper....(52) 187
Oil stove queries....(17) 123
Oleo-margarin, detection of.... 291
Oleo-margarin industry, the.... 168
Orang-outang, the.... 245
Oregon, the climate of.... 104
Organ, a colossal.... 217
Organs, old and new.... 243
Ornaments, natural, in winter.... 118
Ornithological deformities....* 98
Ox soup, whole.... 263
Oxygen from saltpeter....(8) 11
Oxygen, making....(38) 139
Oven, the Vienna bread....(6) 155

P

Pacific coast, resources of the.... 105
Paddle wheel, feathering....*374
Paint for roofs, tar and lime..(32) 380
Paint, to clean.... 271
Paints, silicate....(4) 139
Painting cast iron.... 73
Painting woodwork.... 71
Panel, new ornamental....* 63
Panel wainscoting, equating..(1) 379
Panthers as seed distributors.... 111
Paper box making....* 5
Paper calender rolls.... 360
Paper, fumigating....(17) 219
Paper hangings, dangerous.... 376
Paper pulp engine....*403
Paper pulp, new utilizations of.. 339
Papyrus or paper reed, the....*307
Para-arabin.... 408
Paradise, the lost.... 144
Paraffin, casting....(64) 28
Paraffin paint....(65) 91
Paris green....(48) 139
Paste for outdoor use....(81) 363
Patent bill, the new English.... 177
Patent decision, Supreme Court.. 115
Patent Decisions of the Courts:
  Bobbin and spindle.... 136
  Bolt.... 201
  Cloth marker.... 361
  Corset.... 313
  Drilling apparatus.... 233
  Fire arms.... 297
  Flour process.... 377
  Leather.... 201
  Lamp.... 394
  Paper roofing.... 58
  Patentees, threatening.... 377
  Patents in Canada, working.. 233
  Patents, infringement of.... 10
  Sawing machine.... 115
  Seat.... 360
  Stone crusher.... 393
  Tobacco stamp.... 361
  Trunk.... 409
  Water wheel.... 201
Patent documents, British.... 162
Patent law, the new German.328, 376
Patent laws, State....97, 152, 212
Patent litigation, codfish.... 65
Patent matters in Washington, D. C.... 116
Patent office, the.... 245
Patent office, annual report.... 117
Patent office, publications, English.... 356
Patent office requirements in reissue cases.... 96
Patent right notes.... 277
Patent rights and patent wrongs.. 161
Patents at auction.... 275
Patents, delay in issuing the.... 65
Patents in Canada, the working of 145
Patents, official list of, 14, 28, 59, 75, 124, 140, 156, 172, 184, 204, 220, 236, 252, 268, 284, 300, 316, 332, 348, 364, 380, 396, 410
Patents, recent American and foreign, 10, 26, 43, 58, 74, 90, 106, 122, 136, 158, 170, 184, 202, 219, 234, 249, 266, 282, 298, 313, 329, 345, 361, 378, 394, 409
Patents, resignation of the Commissioner of.... 17
Patents, the Commissioner of.... 193
Patented in England by Americans, inventions, 10, 26, 58, 106, 152, 184, 234, 266, 282, 298, 329, 345, 360, 378, 393
Patentees, physicians as.... 16
Patterns on cloth, stamping..(11) 283
Pavilion, a Persian royal....*323
Peas, paralysis in the.... 248
Peas, poisonous.... 193
Pencils, indelible....(20) 283
Perfume bottle, new....*280
Perpetual motion, an editor's.... 193
Persian dwelling, a.... 183
Peruvian antiquities....*375
Petroleum, etc., purification of.. 359
Petroleum in Ohio.... 79
Petroleum, origin of....294, 340
Petroleum, Persian.... 39
Petroleum, refining....(68) 91
Petroleum supply, decrease of the 57
Petroleum, the composition of... 152
Petroleum trade, New York.... 397
Petroleum, ultimate analysis of.. 25
Phosphorus, conditions of....(25) 362
Photograph microscopic objects, to.... 296
Photographs on glass, printing... 4
Photographer, practical, the St. Louis....* 130
Photographer's retouching desk,*236
Photographic bibliography.... 328
Photographic camera....(41) 268
Photographic process, the coffee. 182
Photographing machinery.... 375
Photography, improvements in.. 304
Photography, making printing plates.... 231
Photography, reproducing steel engravings by.... 5
Photography, the chemistry of..(23) 395
Photo-litographs, colored, etc... 83
Photo magic lantern slides.... 229
Photo-sculpture process, new.... 248
Phthalic acid, preparation of.... 305
Phylloxera remedy—decortication....*182
Picric acid and hydrocarbons.... 67
Piecework.... 305
Pigs and poisonous plants.... 200
Pimples....(48) 139
Pinks, the....* 87
Pipe tongs, wrench, and screw driver....*310
Pipe tools....*371
Pipe vise, the Centennial....* 19
Pipes, area and diameter of....(1) 11
Pitury, a rival to coca.... 328
Planets, eccentricity of the..(36) 138
Planing and polishing machine...*338
Planing mill machinery..115, 135, 147, 200
Plants and insects.... 248
Planting and what to plant.... 85
Plated ware, cleaning....(1) 219
Plating, cleaning before....(32) 395
Plating with nickel and cobalt by immersion.... 295
Platinum, coating metals with.... 407
Platinum, melting....(1) 267
Platinum plating.... 233
Plow, the iron.... 164
Plowing with dynamite.... 262
Plumbers, a warning to bad.... 39
Pneumatic transmission in New York city....*175
Poison, two harmless doses make 39
Polar expeditions, suggestions for future.... 64
Policy, a good.... 138
Polish watch wheels, to.... 229
Polishing gun stocks....(36) 396
Polishing mirrors....(15) 395
Polishing shirts....(2) 250
Polynesia, the ethnology of.... 338
Pomade, a hint for a new.... 84
Pompeii, the ruins, explorations, etc....*326, 327
Population, the world's.... 160
Post office, New York, fall of the roof....308, 328
Postage stamp canceler, wanted, a 83
Postage stamps, canceling....193, 266
Postage stamp frauds.... 135
Postal card ink.... 201
Postal order system, international.... 345
Posterity, for—A suggestion.... 112
Potassium xanthogenate as an antiseptic.... 231
Potassic xanthoxate.... 275
Potato bug, new remedy for the.. 308
Potato, what came in a.... 86
Potatoes, dried.... 164
Poultry, feeding.... 212
Poultry house, to build a..(71) 139
Poultry lice....(35) 348
Powder paper.... 322
Power economizer....* 90
Practical mechanism, 8,* 40,* 68,* 101,* 132,* 165,* 195,* 242,* 293,* 325,* 357*, 387*
Preaching, the science of.... 197
Pressure and combustion.... 211
Prickly comfrey, the....* 71
Printing press, a portable.... 355
Printing process, fac-simile.... 213
Prize for a cure for hog cholera.. 262
Prizes, chemical.... 229
Prizes, industrial.... 338
Progress, American.... 39
Projectile, a new.... 401
Projecting spectra, new method of.... 132
Puddling machine....* 15
Pump bucket, rubber....*310
Pump, new rotary....*182
Pump, the Little Giant....*162
Pump, the Selden....*198
Punching machine, hydraulic....*102
Punching sheet metal, power for (3) 90
Pyroligneous acid....(19) 299

R

Radius of the earth....(34) 187
Railroad accident, the Wetli....*114
Railroad disasters, a word about, 100
Railroad grader....*223
Railroad joint and nut lock....*358
Railway, a compressed air.... 179
Railway accident, the recent.... 68
Railway locomotive, hydraulic..* 79
Railway system, the American.... 89
Railway ticket manufacture.... 297
Railway trains, fast.... 408
Railway, underground, London.. 70
Railways, an English editor on American.... 52
Rapid transit in Paris.... 104
Rat trap, a self-setting....*150
Rats, a safeguard against.... 5
Rats, the utilization of.... 241
Reflector, a segmental parabolic. 180
Reflector, the Balestrieri.... 164
Remedial agents.... 148
Resin, a new kauri gum.... 403
Reward for a new invention.... 229
Rice culture in China....*134
Riches and reason.... 385
Rifle, the Peabody.... 388
Ringbone in horses, blister on...(52) 139
Rivets and riveting machinery..* 53
Rivets, distance apart of.... 47
Riveted joints, strength of.... 84
Rocket, life-saving.... 207
Rockets in case of fire.... 323
Rock drill, improved....*358
Rocks, ages of the....(29) 380
Roof, laying a tin....(4) 11
Roofs, cast iron.... 3
Roofs, leaky shingle....(3) 379
Roots, the respiration of....* 70
Rope gearing.... 42
Ropes, to prolong duration of.... 179
Rose bush, to rejuvenate a.... 119
Roses, grafting.... 194
Rosin oil....(10) 362
Rubber, adulterating.... 164
Rubber articles, new manufacture of....*150
Rubber, vulcanized, dissolving..(59) 91
Rubber worm, patent.... 166
Rust out of steel, to take.... 271
Ruthenium, new investigations on.... 4
Rye for pasture.... 325

S

Safes, how blown open....*244
Safes, protecting.... 23
Safety valves....* 99
Safety valve tests....*353
Saffranine....(48) 139
Sahara, reclamation of the.... 356
Sailing against the wind....*368
St. Peter's, Rome....* 55
Salicylic acid....(2) 155, 294
Salicylic acid as a preservative... 165
Salicylic acid for the feet.... 115
Salicylic acid in the household.. 26
Salicylic acid, new test of.... 180
Salmon's endurance, a.... 227
Salt in England, production of... 372
Salt, Sir Titus, and Saltaire.... 52
Salts, Crab Orchard.... 150
Sand and water.... 71
Sand belts....(30) 235
Sand, drying....(5) 171
Sapolio.... 134
Saw, emery grinder, and polisher.*275
Saw works, patterns for.... 298
Saws, hardening of, by emery wheels....(27) 235
Saws, speed of....(60) 187
Saws, straightening....*259
Sawdust in rough casting....114, 228
Sawmill, portable gang....*6, 85
Scarlet fever epidemic, the.... 105
School life and light.... 225
Science encouraged in the United States.... 128
Science in Mexico.... 374
Science in war.... 408
Science, the achievements of.... 329
Science? what is.... 198
Scientific American, the.... 323
Scientific American, foreign subscriptions.... 345
Scientific American, how it is done.... 129
Scientific American, no connection with.... 129
Scientific American, value of the.... 374
Scientific American without a rival.... 402
Scientific knowledge, commercial value of.... 164
Scissors, German vs. Sheffield.... 325
Screw-cutting lathe....*118
Screw-cutting threads, remarkable....*296
Screw-cutting tools....* 54
Sea lions, Californian....*343
Sea water on lead, action of.... 119
Secret writing, new method of...*406
Secretary bird, the.... 311
Selection applied to man.... 176
Self-made men.... 380
Self-reliance necessary to success.... 121
Sewage irrigation on a small scale....*352
Sewage utilization, near Paris...*367
Sewer gas in houses....(43) 268
Sewing machine monopoly, the.. 277
Sewing machine, the rise of the.. 320
Shafting, line, to adjust....* 24
Shams.... 247
Shampooing liquid....(40) 90
Sheep farming in California.... 356
Shellac, dark....(8) 331
Shipbuilding, iron.... 273
Shipbuilding, steel.... 85
Shoe dressing, liquid....(51) 28
Sickness, ring.... 244
Sideraphthite.... 369
Sidewalk, artificial stone....(9) 379
Silk dresses, poisonous.... 274
Silk manufacture, American.... 337
Silk, new solvent for.... 87
Silk-spinning fish, a.... 265
Silver plate, discolored....(12) 395
Silverware, the manufacture of *287 290
Sisal....(8) 283
Slate quarry, a visit to a.... 83
Slate roofs.... 97
Sleep.... 355
Slide valve friction.... 163
Smithsonian Institute, the.... 229
Snake at the Zoo, a large.... 226
Snake charmers, Hindoo.... 327
Snake charmers humbugs.... 160
Snake rain, a.... 86
Snakes catch fish? do.... 164, 228, (4) 283, 407
Snow, fertilizing influence of.... 119
Snow plow, a screw....*226
Soap, bar....(33) 235
Soda ash process, another.... 210
Soda-carbonating apparatus, a...*226
Solar photographs....* 98
Soldering fluid....(21) 107
Something to do.... 121
Sound and light, the analogy of. 169
Spark arrester, locomotive....* 70
Sparks, zigzag.... 376
Specimens, medical.... 87
Spectroscope for direct vision....*184
Spike machinery....*163
Spindle, welding of point of (82), 282, (22, 23, 24, 25) 299, (35) 363
Spirit lace.... 38
Spoke-making machinery....* 88
Sportsmen's tackle, where to buy 342
Spring ailments.... 266
Spring fever, how not to have it.. 280
Springs, vehicle....*214
Springs, winding spiral....*324
Spring-shaping machine....*374
Stains, apple juice....(19) 395
Stains, grease, on cloth....(36) 348
Stains of tannic acid....(82) 187
Stains of wine on marble....(2) 267
Stains, oil, to remove from stone, (14) 395
Stains, smoke, on marble....(49) 236
Star? what is a temporary.... 289
Stars, distances of the....(7) 347
Statues, perspective of....(2) 379
Steam cars vs. horses.... 308
Steam carriage, new....* 57
Steam economy computations... 224, *372, 404
Steam engines, water consumption of.... 324
Steam heating pipes....(38) 187
Steam in the streets.... 209
Steam street cars....*131
Steam street sweeper.... 81
Steam wheel, Thomas'....*207
Steamboat on the Mississippi, the first....20, 68
Steamboat, proposed fast.... 179
Steamboat, the first, Robert Fulton's account.... 385
Steamer, a large passenger.... 341
Steamers, new British war.... 134
Steamer, new ocean.... 338
Stearin from fats.... 22
Steel armor plates, etc., new mode of making.... 407
Steel, cast, without flaws.... 217
Steel iron, German.... 143
Steeling copper plates for engraving.... 408
Stenochromy—a new art.... 39
Stone walls, efflorescence on.... 108
Stone-working implements....*213
Storm glasses and their indications....* 38
Straightening metal plates....*211
Straightening saws....*250
Straightening wrought metal plates....*149, *181
Steam power and its utilization..*266, 292
Streets, watering with salts.... 273
Subnitrate of mercury, dissolving (22) 138
Success in life.... 100
Sugar and coffee machinery....* 82
Sugar evaporator.... 97
Sugar, testing....(3) 107
Suicide statistics.... 116
Sulphur for scarlet fever.... 35
Sulphur in illuminating gas.... 217
Sulphur, spurious flowers of.... 355
Sulphuret of iron....(21) 203
Sumac.... 199
Sun, a new.... 85
Sun, the new, and its disappearance....*104
Sunlight, the synthesis of....*306
Surveying the State of New York 248
Switchman, a machine.... 182
Sympathy, helpful.... 308

T

Table, machine dining.... 255
Tanning materials in Great Britain.... 311
Tantalite....(37) 315
Targets for trial of the 100-ton gun....*150
Tartaric acid, dissolving....(39) 139
Tartaric acid solutions, preserving.... 407
Taxing power of the legislature.. 369
Telegraph, a cigar box.... 20
Telegraph cables, oxidation of... 348
Telegraph, photographs by.... 297
Telegraph, size of the Atlantic.... 57
Telegraph sounders....(7) 44
Telegraph station, a northerly... 335
Telegraph, the speaking.... 120
Telegraphs, underground.... 311
Telegraphy and time....(14) 250
Telegraphy, quadruplex.... 369
Telephone....(26) 250
Telephone, Gray's....*268
Telephone in New York, Gray's. 245
Telephone, Professor A. Graham Bell's....*191, 359
Telephone, the.... 388
Telephone, the speaking, in New York....342, 351
Telephone triumphs, more.... 183
Telephonic music.... 265
Tellurium....(17) 171
Tempering anvils....(34) 138
Tempering brass....(25) 331
Tempering chisels, etc., for millstones.... 211
Tempering shovels....(35) 220
Tern, the.... 407
Testing machine, autographic....*342
Tetrachloride of carbon....(14) 59
Theater scenery, outlining.... 4
Theater scenery, uninflammable, 2
Theaters and halls, modern.... 33
Think, teach the young to.... 102
Tigress at the Berlin Zoological Gardens.... 409
Tiles, a novelty in flooring.... 40
Timber, California.... 58
Timber, decay of.... 293
Timber, selecting.... 85
Time ball in New York city.... 257
Time locks.... 42
Time piece, a gigantic.... 31
Time, pneumatic transmission of. 292
Time, the transmission of correct.... 240
Tinning cans....(72) 139
Titanic iron from the Ural.... 337
Titanium chloride for prisms.... 231
Toad-eating fly, a.... 24
Toasting implement....* 99
Tobacco and the human system.. 344
Tobacco pipe fish, the....* 7
Tomatoes preserved in water.... 54
Tornado at Mount Carmel, Ill.... 398
Torpedo balloons.... 404
Torpedo defences wanted.... 376
Torpedo launch warfare....*229
Torpedo, manufacture of the Harvey....*402
Torpedo that travels 275 miles an hour.... 295
Torpedo warfare, Porter's system....*150
Torpedoes.... 337
Tortoiseshell scrap, utilizing (10) 395
Toys, dangerous.... 196
Tramp, utilizing the.... 376
Trance.... 400
Trap, sewer....*230
Treasure trove, a wonderful.... 2
Trees, buy small.... 70
Trees for profit, planting.... 282
Trees, hide-bound.... 262
Trees, plant vigorous young.... 181
Trees, wash for.... 66
Triangle, area of a....(20) 267
Triangle, bisecting a....*(12) 347
Triangle, measuring a....(55) 363
Trisecting an angle....* 36
Trolling hook....*114
Tube expander, a new....* 66
Tubes, sonorous, novelty in.... 197
Tunnel, the Delaware and Lackawanna Railway....*319
Tunnel, the new Bergen....130, *319
Tunnel, the Sutro.... 408
Turkey in America.... 404
Typhoid fever, the contagion of, 245

U

Umbrellas, past and present.... 312

V

Valve, relief and safety stop....*251
Vanadium, literature of.... 281
Varnish, body copal.... 226
Varnish, copal....(12) 59
Varnish for balloons....(34) 268
Varnish for brass work....(87) 188
Varnish for copper....(2) 139
Varnish for gun barrels.... 25
Varnish for patterns....(5) 75
Varnish, thick....(55) 91
Varnishing hair pins....(19) 90
Varnishing Indian ink drawings..(10) 75
Varnishing wood....(40) 236
Vegetarianism.... 296
Velocipedes, water....* 38
Veneers, laying thin....(48) 251
Vessels, propelling.... 81
Vessels, raising sunken....*324
Volcanoes, miniature....(24) 138
Violins, grooves in....(39) 316
Violins, something on....*100
Violins, wood for....(18) 75
Vision, binocular.... 20
Vision, the limits and powers of.. 400
Vulcanite....(32) 295

W

Wages in Scotland.... 308
Wall, a concrete.... 168
Wall paper, a new.... 68
Walls, damp.... 38
War, European, as affecting America.... 272
Washing fluid....(45) 187
Waste in machine shops.... 389
Watch, an intelligent.... 108
Watch, a wonderful....*342
Water and grease proof paper.... 19
Water boiled in a sieve, etc....*306
Water decomposed by sodium amalgam.... 276
Water elevator....*274
Water, impure cistern....(4) 379
Water in long pipes....(44) 284
Water pipes, laying.... 356
Water pipes, lead....(16) 208
Water pipes, London.... 409
Water pipes, to prevent freezing, (38) 27
Water, sulphate of lime in....(8) 379
Water, testing, with tannic acid.. 296
Water works of Baltimore, permanent.... 288
Water works, the Louisville....* 25
Watering ships in mid-ocean.... 197
Waterproofing cotton rope....(4) 59
Waterproofing fabrics, cement for.... 114
Waterproofing pants....(35) 396
Weather observations, simultaneous.... 86
Wedge keys and collars, angle for 49
Weighing instrument, new.... 305
Weight, distribution of....(37) 363
Weight of men and women.... 180
Well, a spouting.... 291
Wells deeper, digging.... 197
Whale, death of the white.... 105
Whales on the California coast... 103
Whalebone....(3) 395
Whalebone, cracks in....(8) 219
Whaling gun, improved.... 355
White color in animals, absence of.... 114
White, Paris, substitute for white lead.... 376
Whitewash your shops.... 56
Whitewashing.... 85
Wind power....(5) 155
Wine in France, yield of.... 407
Wine, sour....(21) 283
Wire, crossing a river on a.... 121
Wire for the East river bridge....*137
Woman's invention, a....* 99
Wood, constructive use of.... 25
Wood, red, staining....(7) 203
Wood, staining.... 323
Woodpeckers.... 389
Woodworking machines, French.*210
Wool and woolen stuff, purification of.... 114
Wool, cleansing.... 197
Wool, prices of.... 151
Workingmen, employers and.... 384
Workmanship, fine.... 95
Workmen, good and bad....*309
Workshops, cheerless.... 329
Worms in timber....(20) 123

Y

Yard stick and bias measure....*362

Z

Zinc, a test reaction of.... 25
Zinc, corrosion of sheet.... 54
Zinc-lined water coolers.... 389
Zinc, purifying.... 296